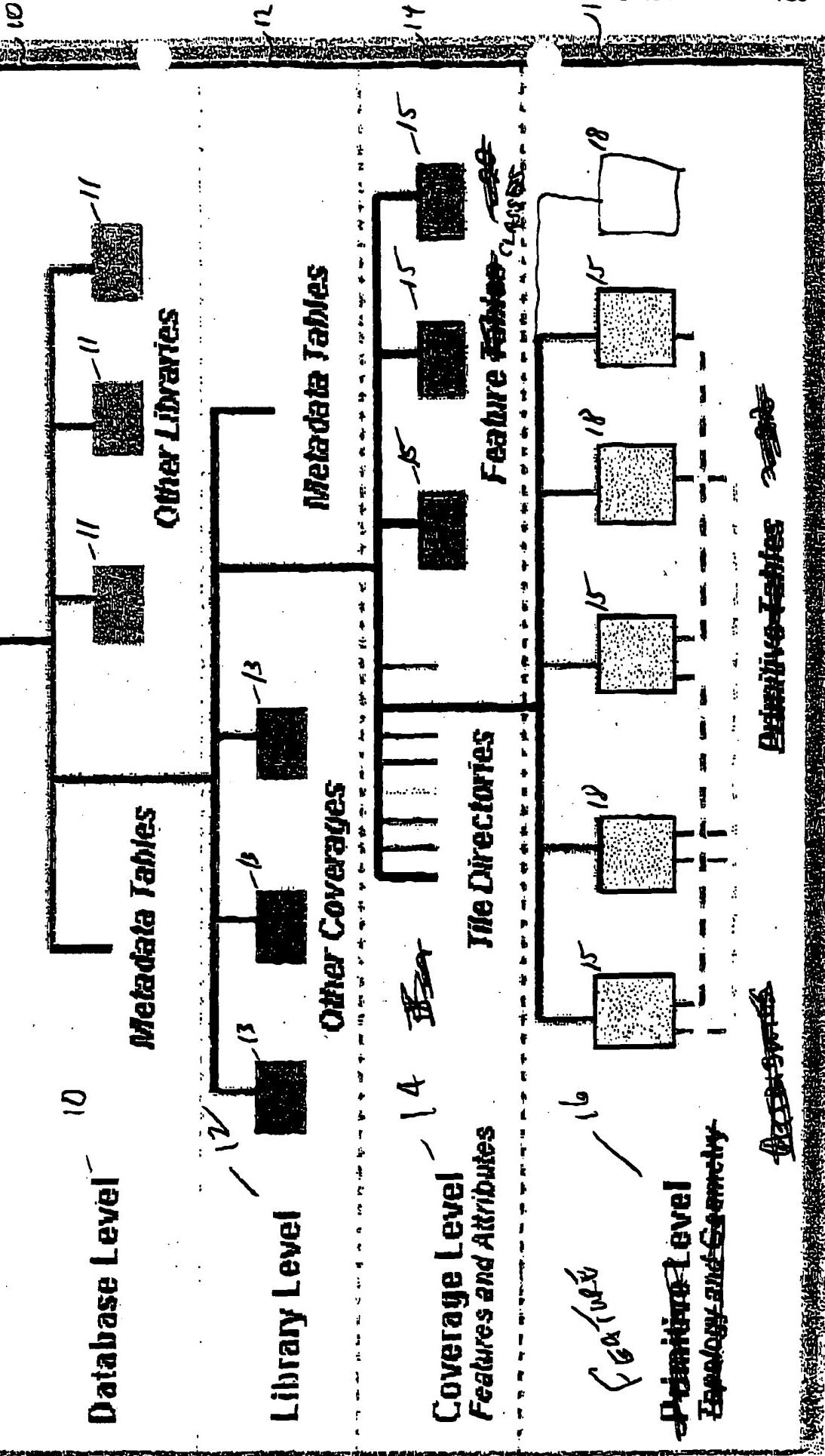


WEB DATA STRUCTURE



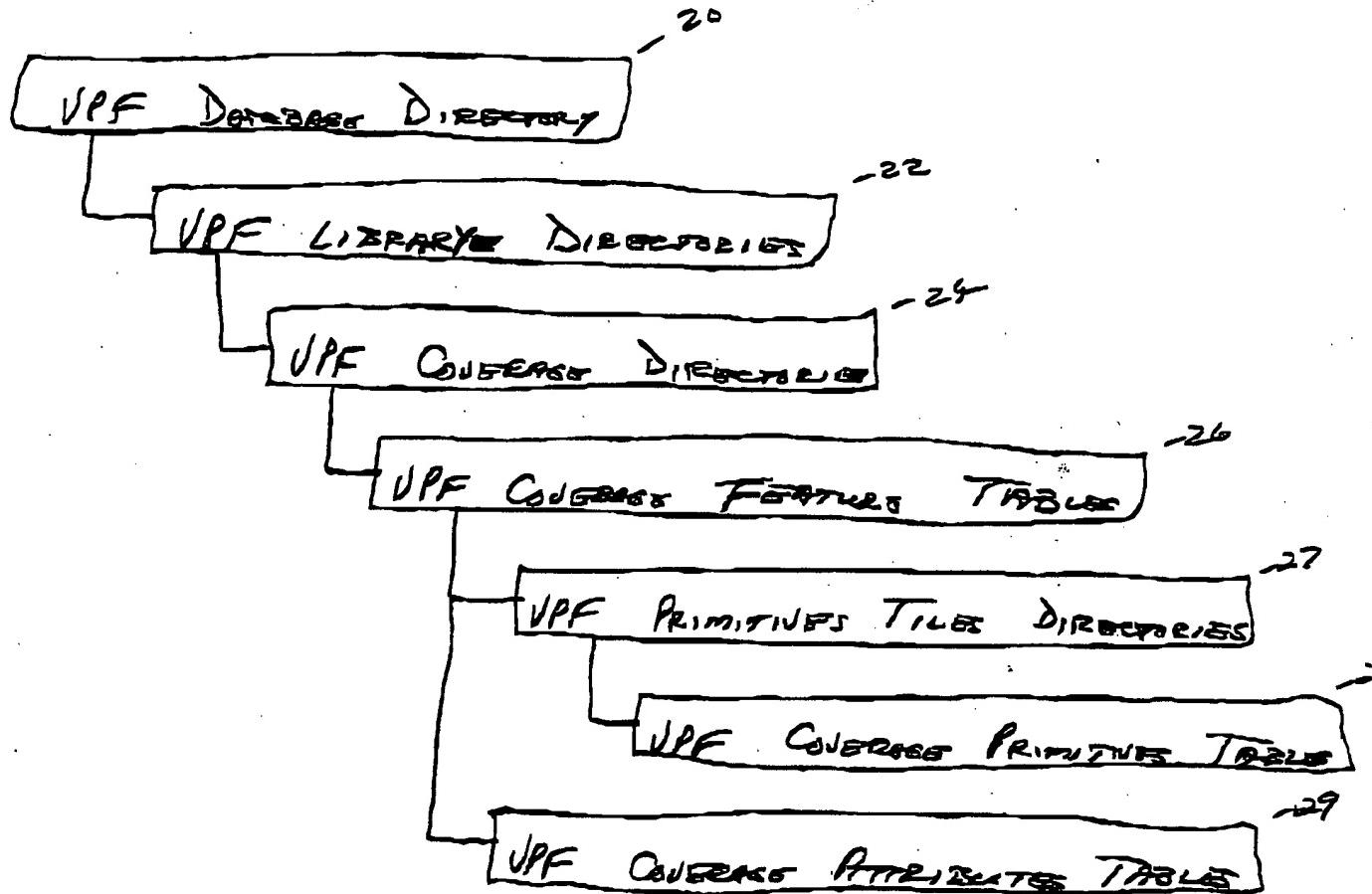
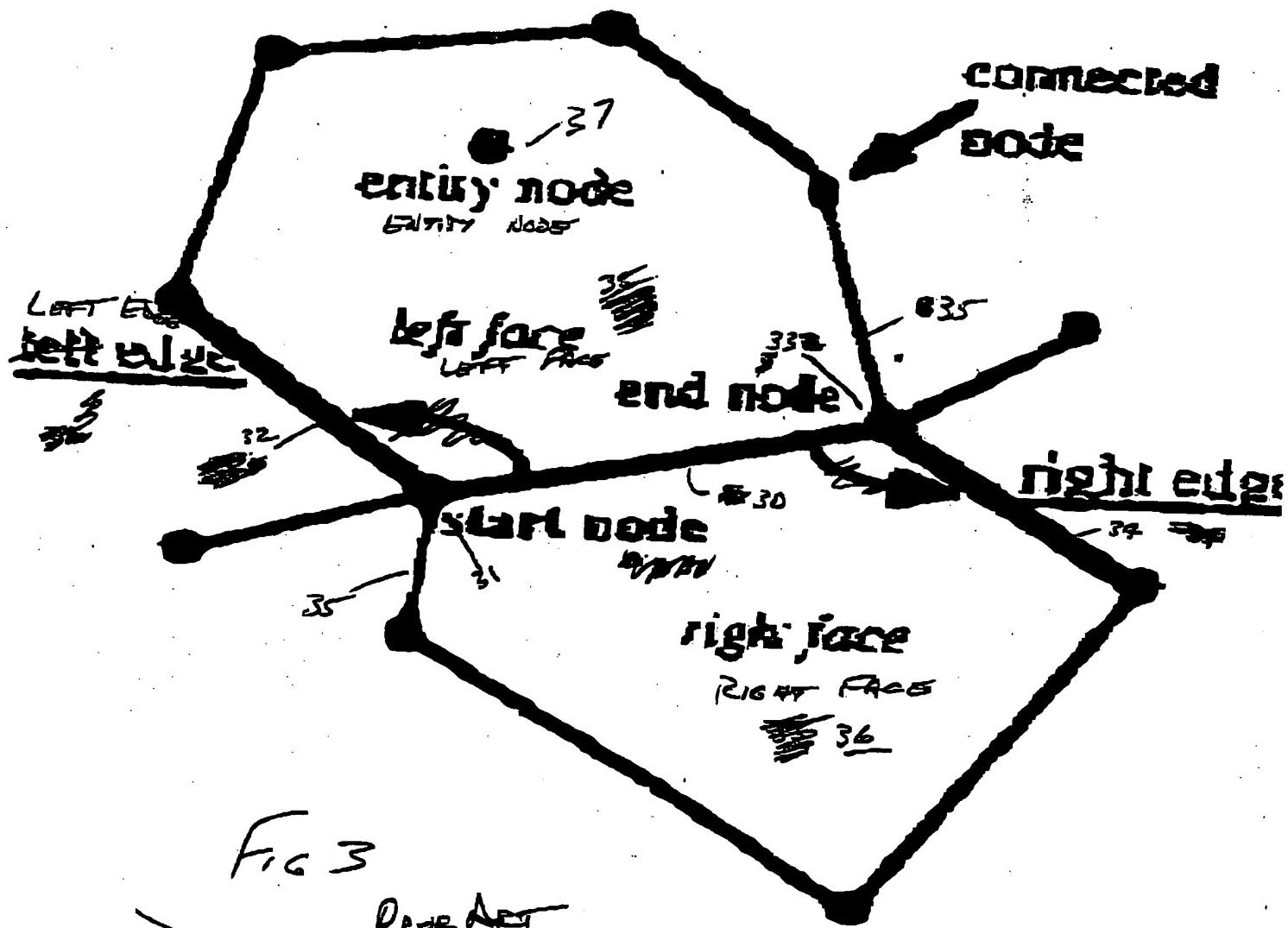


FIG 2

PRIOR ART

~~with these definitions, winged-edge topology
orientation of neighboring nodes, edges and~~



~~Figure I. Winged-Edge Topology~~

~~provide a mutually exclusive and collective partition of a geographic region. It is defined by a set of faces and edges that do~~

Stages of Initialization

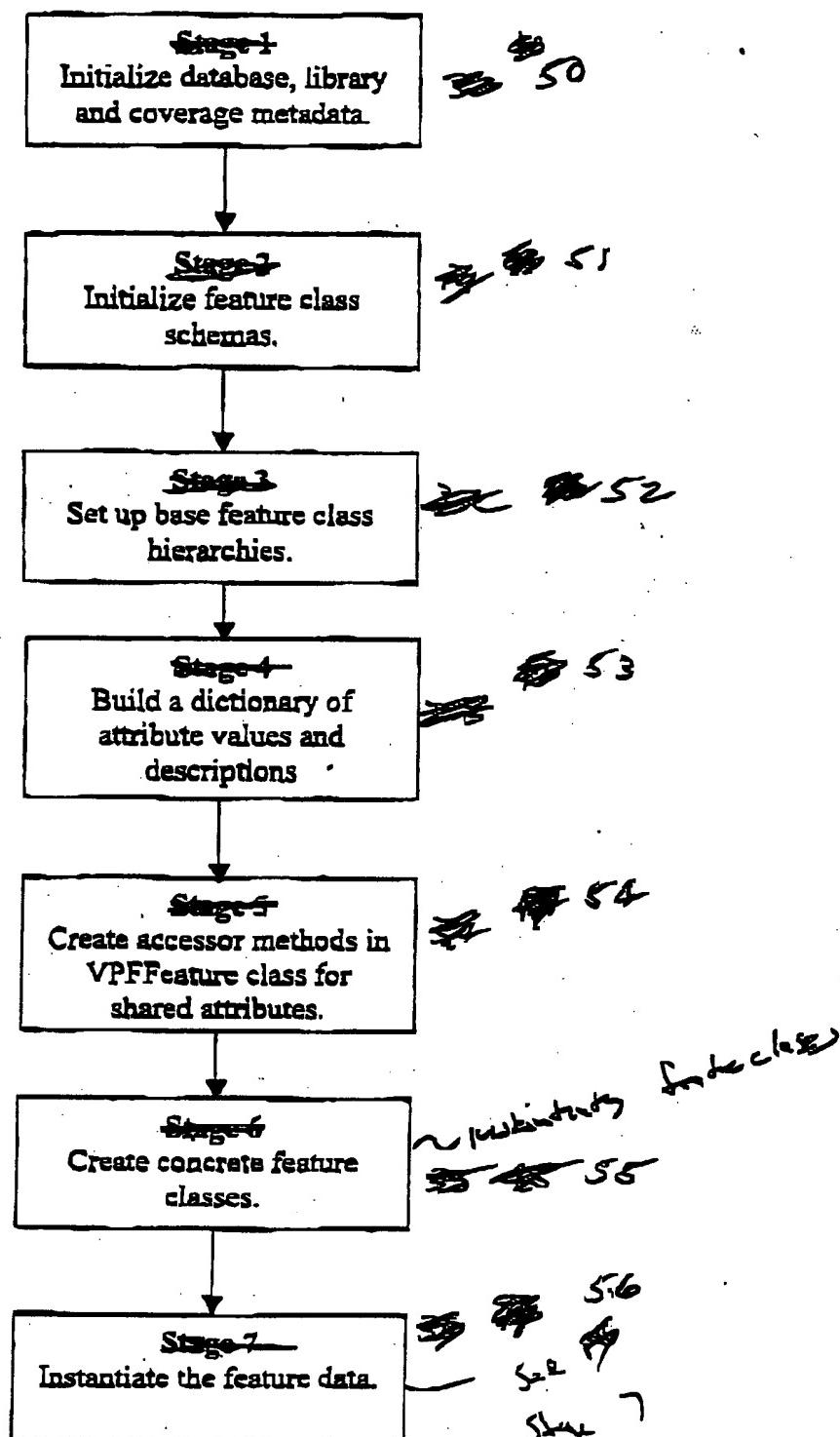
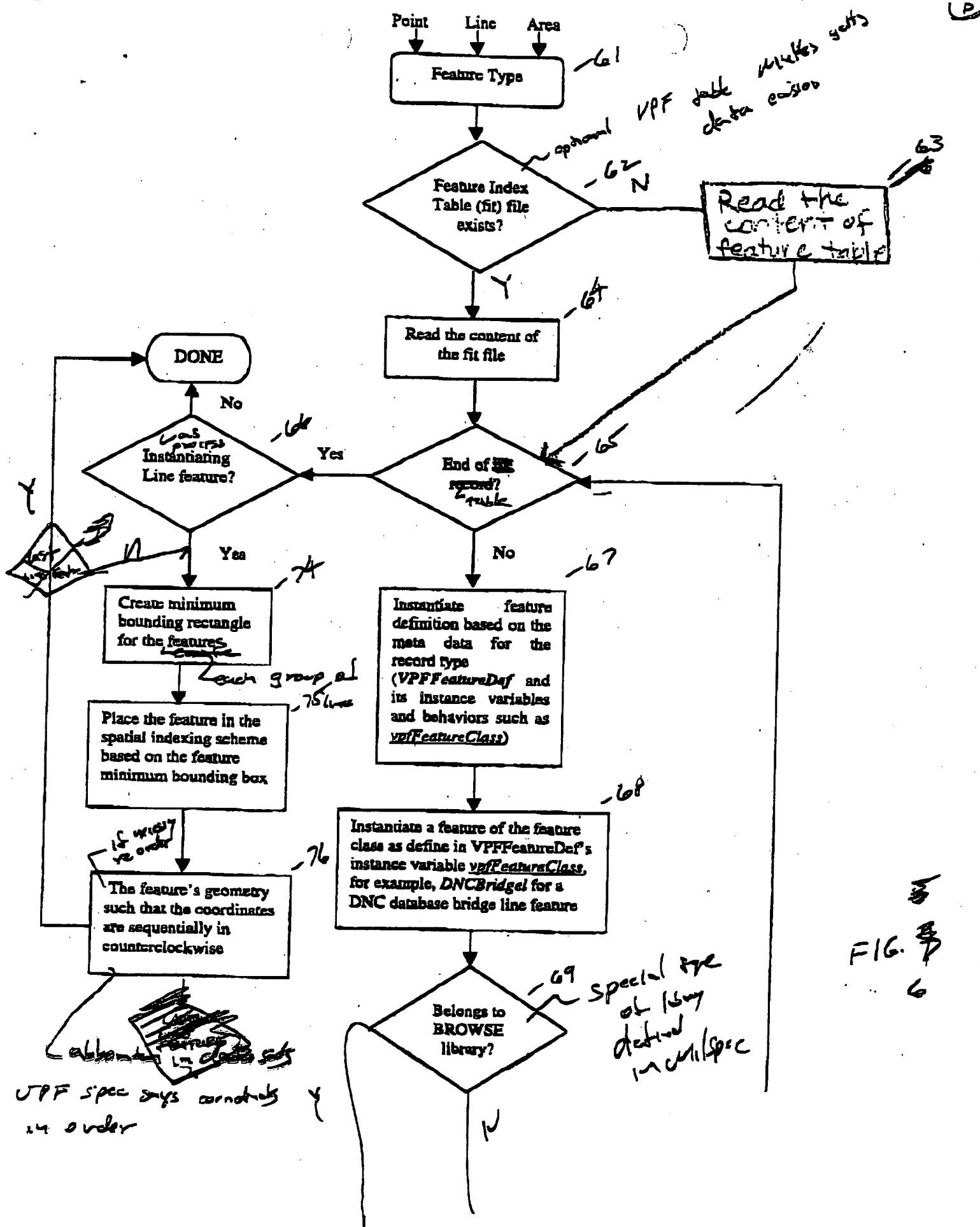
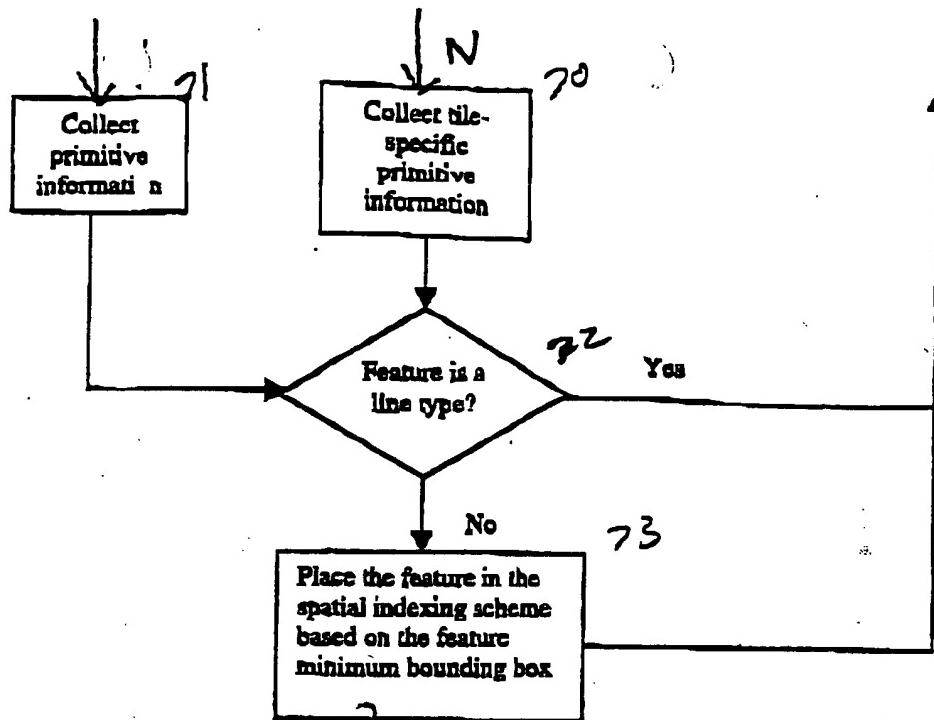
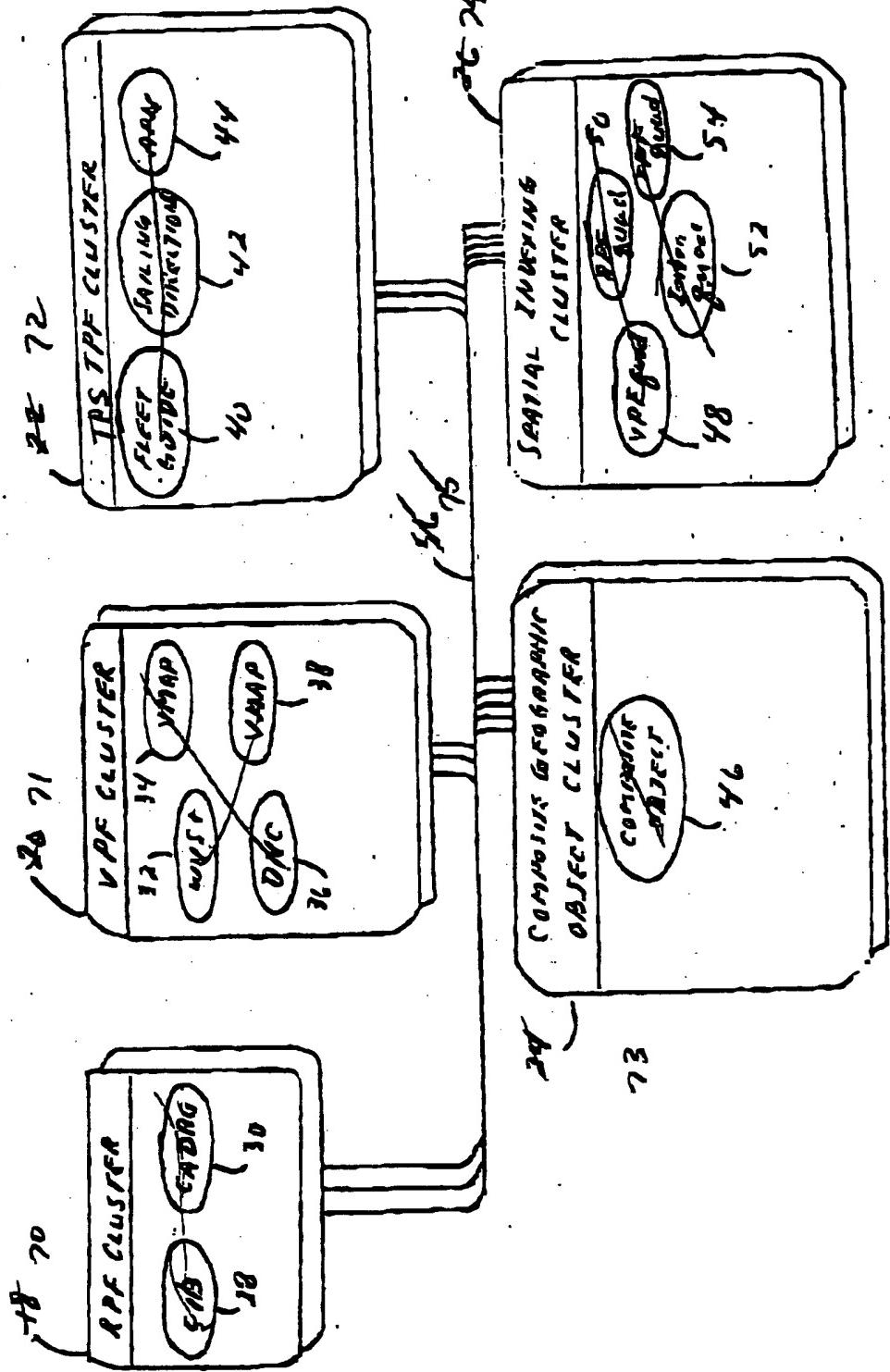


FIG 3 45



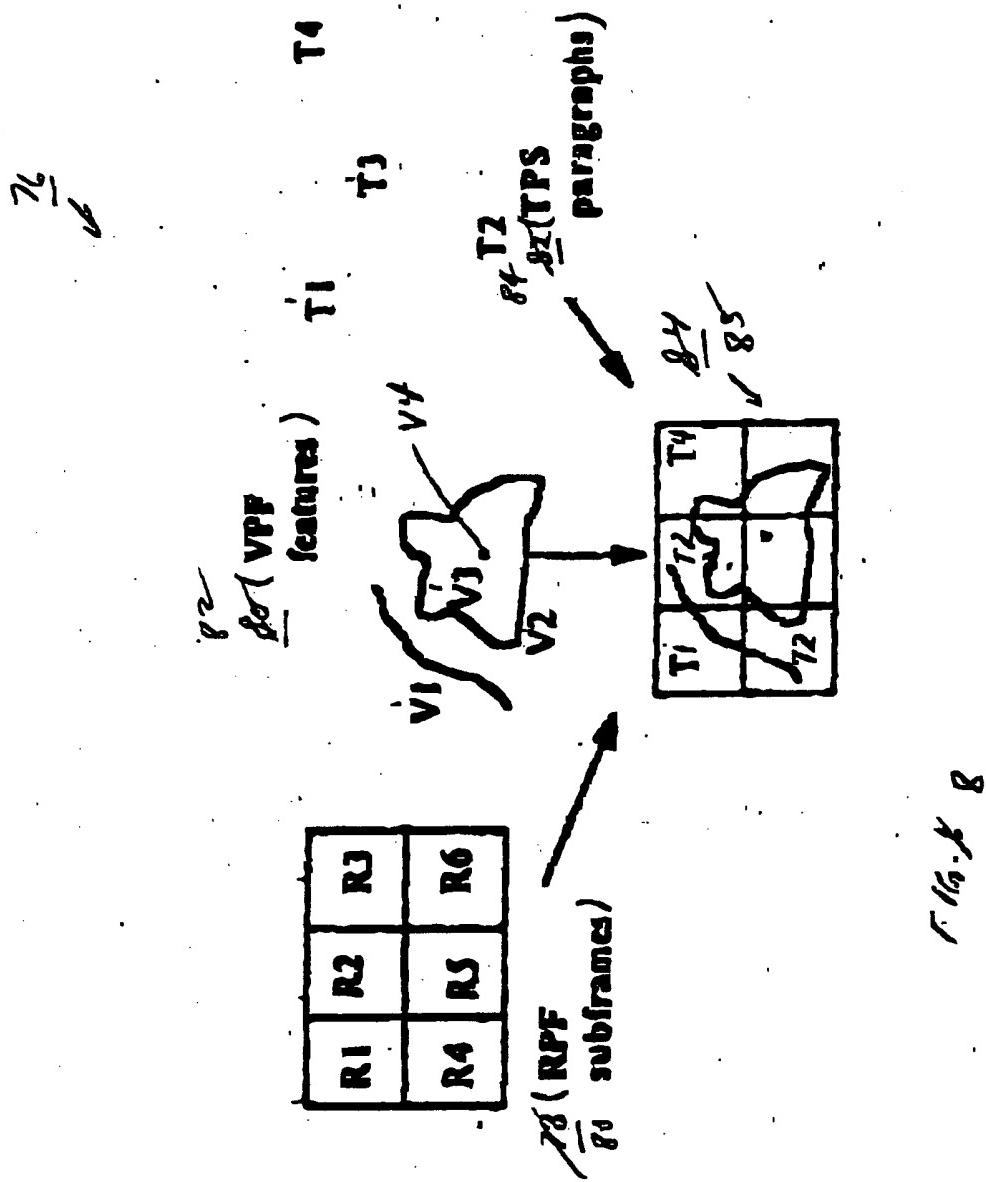


minimum bounding box
provided by UPP



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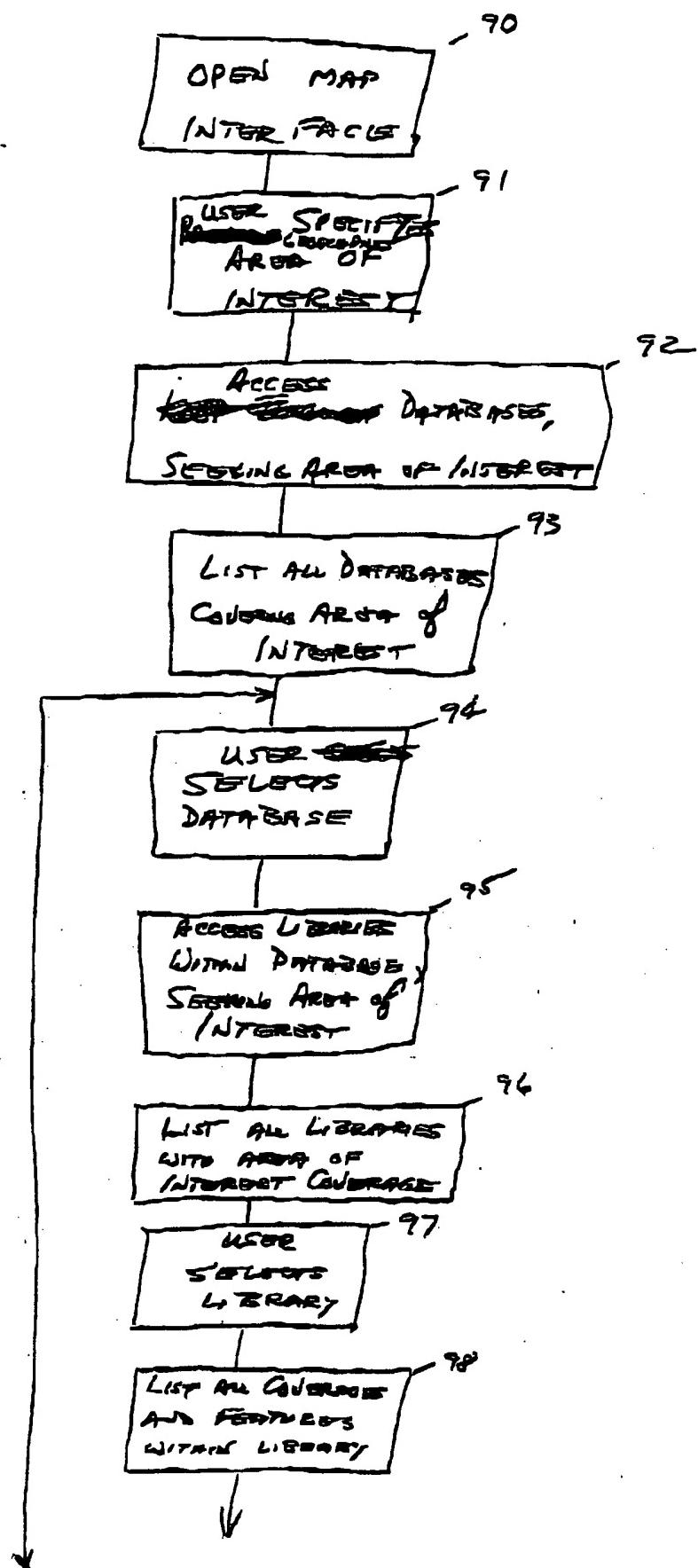


FIG. 9

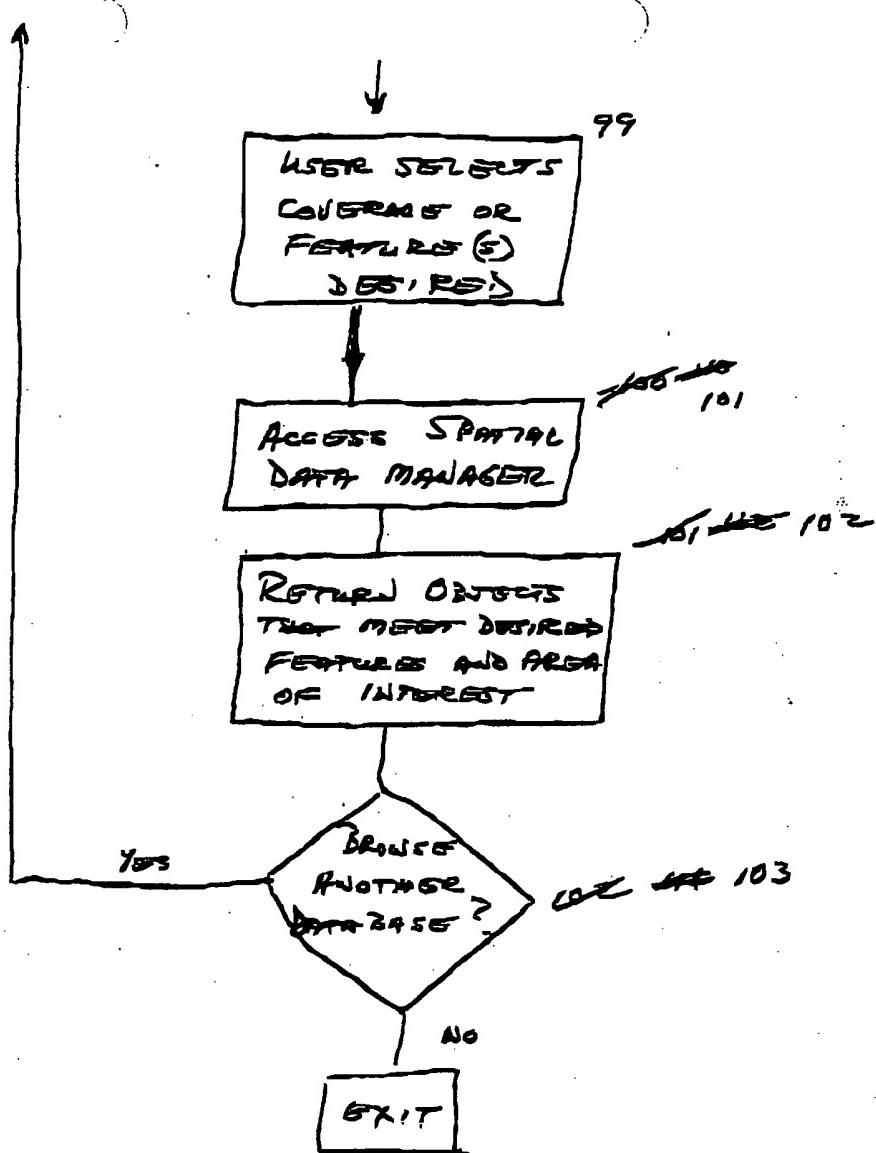


FIG 9

~~share edge's startNode~~

Such an algorithm to determine the neighboring edges can be error-prone. To prevent this possibility, a graphical user interface (GUI) has been developed to allow the user to select neighboring edges. All incident edges to the edge in consideration are displayed. With buttons for next, previous and select actions, the user has the flexibility to view and select among all possible proximate edges.

An example of an edge intersecting another edge is described below.

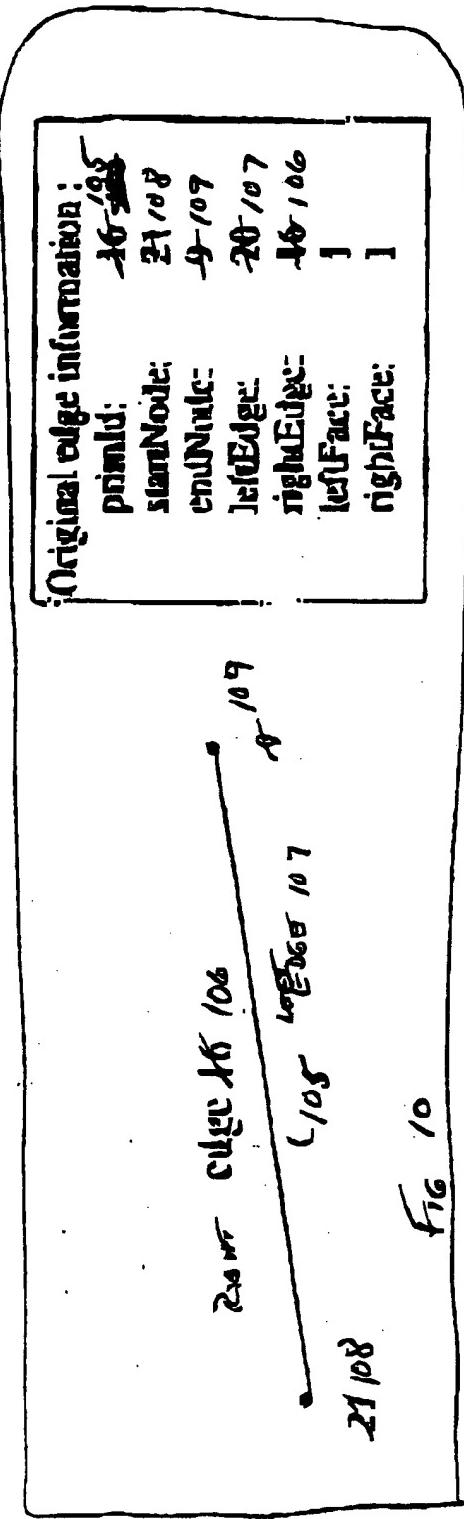


Figure 4. EdgePrim Before a New Line Feature is Added

Add a new line feature defined by three coordinate points at each vertex. Originally, this new feature is created as edge #2 with startNode and endNode of 56 and 57. The two lines intersect at two locations. Topology update should result in creation of two other edges for the new line feature and also for the intersecting line feature. The resulting winged-edge topology after adding a feature can be seen in Figure 5.

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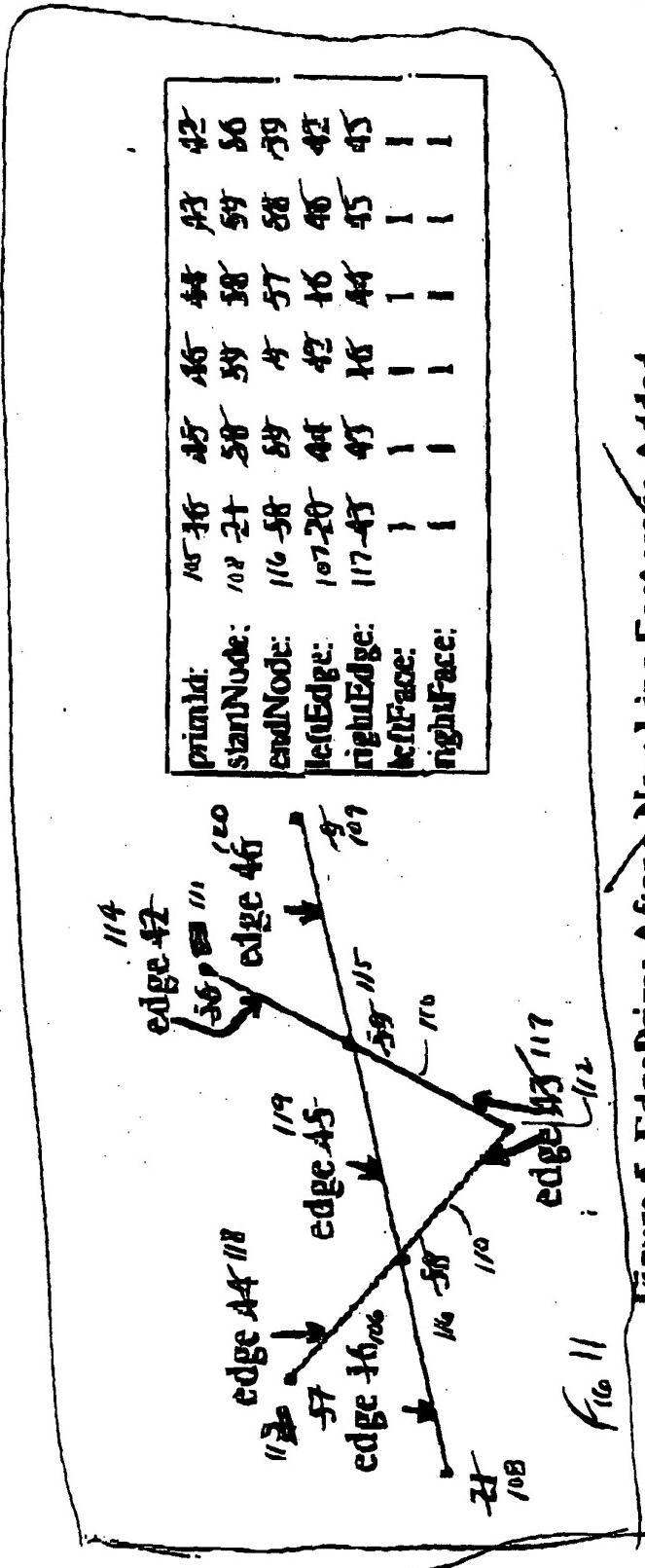


Figure 5. EdgePoints After a New Line Feature is Added

~~Each feature is completely defined by its primitive information and maintains its own primitive information. Since each feature's symbol has direct object pointers to its graphic elements collection of spatial primitives, updating and maintaining topology is greatly facilitated.~~

CONCLUSIONS AND FUTURE WORK

We have demonstrated that ViPF winged-edge topology can be updated in a reasonable manner within an object-oriented framework. We have observed that

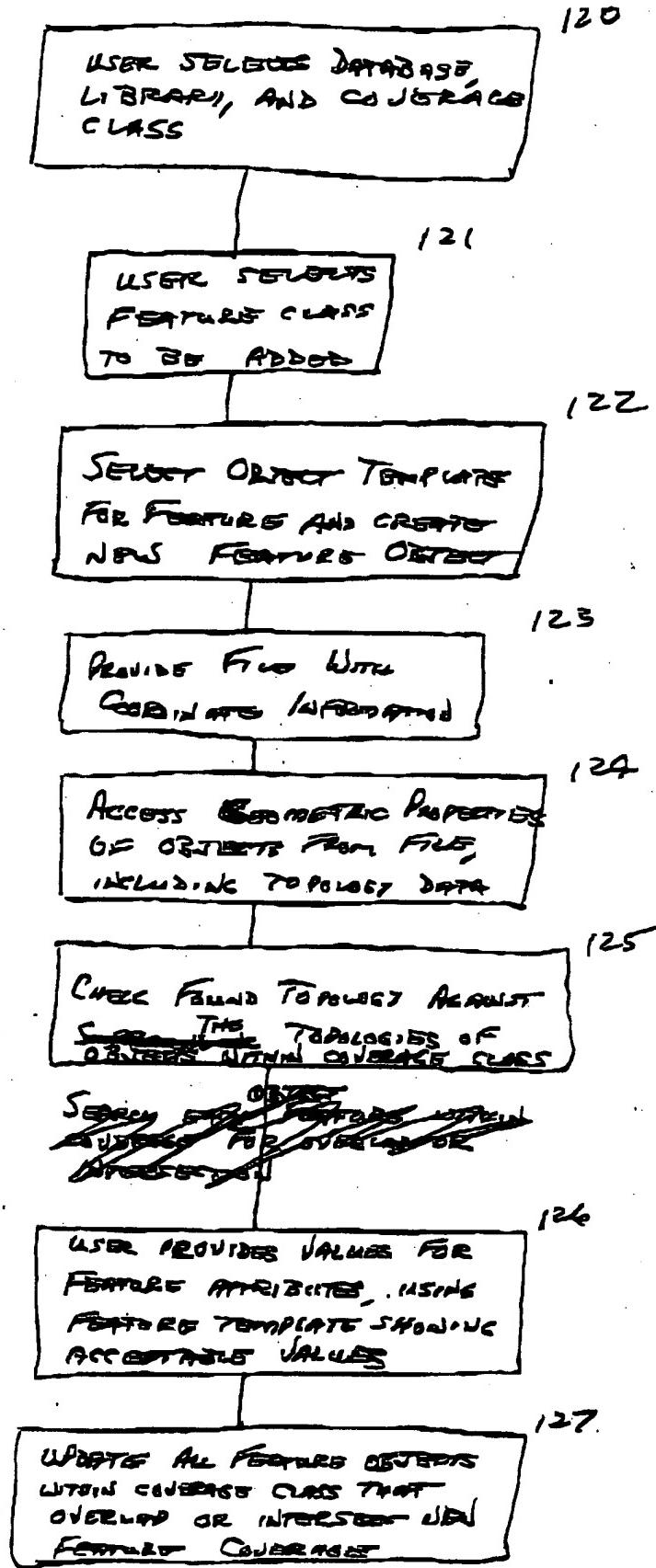


FIG 12

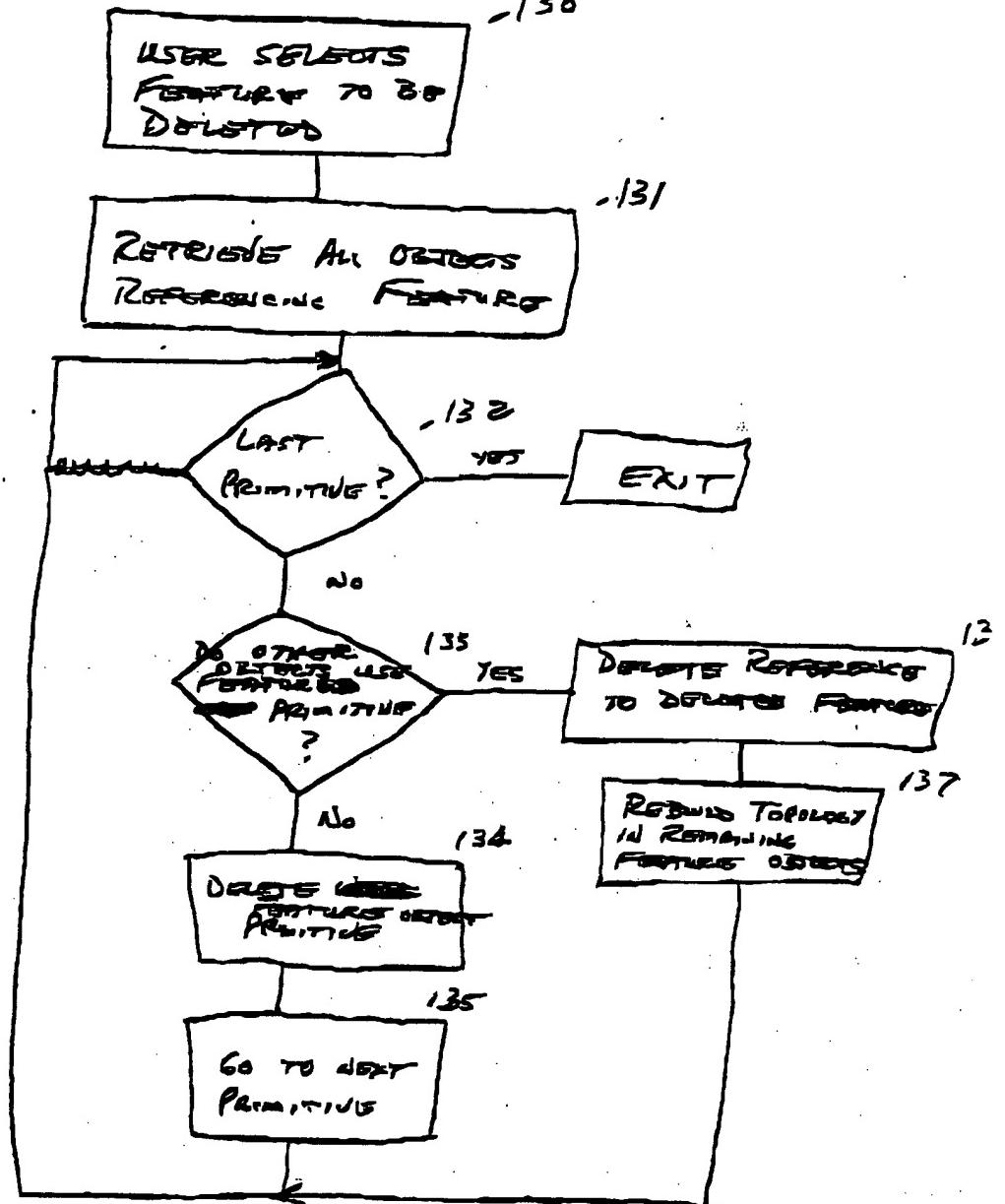


FIG 13